Instructions: Return   your   answers   in   a   **single   pdf-file   through   MyCourses**
(*lastname_firstname_PII_PS1.pdf*). Make sure to include your name and your student number
in your answers file. You may draw the graphs by hand or with any software (excel, power
point, matlab, word,...). In whichever way you draw them, remember always to label the
axes, and any point and line or curve that you draw. Add some description/explanation. If
solutions are handwritten, make sure that your handwriting is easy enough to read, the picture
is of good quality, the pages are labelled, in the right order and orientation.

1. Let's continue with the banana plantations and fishermen example from the lectures. Start
    by drawing the diagram from the lecture and the private marginal cost curve.
    a. Assume that the actual harmful pesticide use is taxed at the optimal level. Draw the
        marginal private cost curve for plantations. Where does it lie compared to the original
        one and why? What is the produced amount in this case and how does it compare to
        the Pareto-efficient amount (assume that the price is $400)?
    b. Compare the distributional consequences of the different government policy options:
        regulation, Pigou-tax and compensation (groups: fishermen, plantation owners and the
        government, i.e. the taxpayers)

2. One of the most contentious issues in city growth and urban planning is building height
    and building heights are regulated in most major cities around the world. Consider a real
    estate developer who is trying to decide the optimal height of the building. Assume that
    construction costs increase with each additional floor and an additional floor will bring in
    more revenue, but the revenue will be higher at low heights than at tall heights.
    a. Draw a diagram with the quantity of floors on the horizontal axis, showing the
        marginal private cost of constructing additional floors as an upward-sloping line, and
        the marginal private benefits. Illustrate in the diagram the number of floors that the
        profit-maximizing developer will produce.
    b. Suppose now that there are negative externalities associated with taller buildings, such
        as windier streets, blocked views or congestion. Draw the marginal social cost curve
        on the diagram. What is the optimal height level now and how does it compare to the
        free market equilibrium level (bigger/smaller)? How would a city planner be able to
        implement this level?
    c. Now suppose that instead of negative externalities, there are positive externalities
        associated with higher buildings. How would the graph change now? What is the
        optimal height level now and how does it compare to the levels you identified in (a)
        and (b) (bigger/smaller)? Can you think of reasons why taller buildings might produce
        positive externalities?

3. For each of the following goods or bads, decide whether they are rival and whether they
    are excludable, and explain your answer. If you think the answer depends on factors not
    specified here, explain how.
    a. Seats in a cinema.
    b. Chromium browser codebase
    c. A public park

d. Free WiFi
　　e. Disney+
　　f. Boxing lessons at a private gym

4. In which of the following cases is there a moral hazard problem?

　　a) Leaving a bike unlocked when it is insured
　　b) Over-fishing at a lake
　　c) Buying goods online
　　d) An investment in a friend's new venture, where you cannot observe how hard he is trying
　　e) A car mechanic suggesting expensive repairs and services
　　f) A student playing loud music late at night in a dorm

5. In Rustbucket, Michigan, there are 200 people who want to sell their used cars. Everybody knows that 100 of these cars are lemons and 100 of these cars are good. The problem is that nobody except the original owners know which are which. Owners of lemons will be happy to get rid of their cars for any price greater than $200. Owners of good used cars will be willing to sell them for any price greater than $1,500, but will keep them if they can't get $1,500. There are a large number of buyers who would be willing to pay $2,500 for a good used car, but would pay only $300 for a lemon. When these buyers are not sure of the quality of the car they buy, they are willing to pay the expected value of the car, given the knowledge they have.

   a) If all 200 used cars in Rustbucket were for sale, how much would buyers be willing to pay for a used car? Would owners of good used cars be willing to sell their used cars at this price? Would there be an equilibrium in which all used cars are sold? Describe the equilibrium that would take place in Rustbucket.

   b) Suppose that instead of there being 100 cars of each kind everyone in town is aware that there are 120 good cars and 80 lemons. How much would buyers be willing to pay for a used car? Would owners of good used cars be willing to sell their used cars at this price? Would there be an equilibrium in which all used cars are sold? Describe the possible equilibrium or equilibria that would take place in Rustbucket.

6. Farm A is growing carrots and farm B is grazing rabbits. If there is no fence between the farms, the rabbits will eat the carrots of farm A causing a loss of €1000 to farm A. Farm A can build a fence between the farms at the cost of €800 preventing the losses from rabbits. Farm B can prevent the rabbits from escaping the farm at the cost of €500. Consider two legal systems. In first (English common law) the rabbit grazing farm should pay for the losses caused by the rabbits. In the second (free grazing, e.g., formerly in some U.S. states) the rabbit grazing farm is not responsible for the losses caused by the rabbits. Assuming that the farmers can negotiate without any costs, what is the outcome in the two systems? What would be the outcome if the losses from rabbits were €400?